

<221> VARIANT  
 <222> (8)  
 <223> Xaa is Ala, Gln, Gly, Lys or Thr  
  
 <220>  
 <221> VARIANT  
 <222> (9)  
 <223> Xaa is Arg, Asn, Asp, Glu or Gly  
  
 <220>  
 <221> VARIANT  
 <222> (10)  
 <223> Xaa is Gln, Leu or Gly  
  
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 <222> (11)  
 <223> Xaa is Ala, Trp or Tyr  
  
 <220>  
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 <222> (14)  
 <223> Xaa is Asn, Gln, Phe, Ser or Val  
  
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 <222> (15)  
 <223> Xaa is Arg, Leu, Pro or Ser  
  
 <220>  
 <221> VARIANT  
 <222> (16)  
 <223> Xaa is Leu, Ser, Trp or Tyr  
  
 <400> 1  
 Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa  
   1                  5                  10                  15  
  
 <210> 2  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence  
  
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 <223> Description of Artificial Sequence: family of  
       preferred CEA binding moieties  
  
 <220>  
 <221> VARIANT  
 <222> (1)  
 <223> Xaa is Asn or Asp

<220>  
 <221> VARIANT  
 <222> (6)  
 <223> Xaa is Phe, Met, Leu or Asn

<220>  
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 <222> (7)  
 <223> Xaa is Asp, Gly, Ile, Lys, Phe or Thr

<220>  
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 <222> (9)  
 <223> Xaa is Arg, Asn, Asp, Glu, Gly or Trp

<220>  
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 <222> (12)  
 <223> Xaa is Ala, Gly, His, Phe, Thr, Tyr or Val

<220>  
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 <222> (15)  
 <223> Xaa is Arg, Leu, Pro or Ser

<220>  
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 <222> (16)  
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<400> 2  
 Xaa Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Xaa  
 1 5 10 15

<210> 3  
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 <212> PRT  
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<220>  
 <223> Description of Artificial Sequence: CEA binding  
 loop

<220>  
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 <223> Xaa is Asn, Glu or Met

<220>  
 <221> VARIANT  
 <222> (3)  
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<220>  
 <221> VARIANT

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<220>  
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<220>  
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<222> (6)  
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<220>  
<221> VARIANT  
<222> (7)  
<223> Xaa is Gln, Gly or Leu

<220>  
<221> VARIANT  
<222> (8)  
<223> Xaa is Ala, Trp or Tyr

<220>  
<221> VARIANT  
<222> (9)  
<223> Xaa is Ala, Gly, His, Phe, Thr or Val

<400> 3  
Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys  
1 5 10

<210> 4  
<211> 16  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 4  
Asn Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Ser Tyr  
1 5 10 15

<210> 5  
<211> 16  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 5

Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu  
 1 5 10 15

<210> 6  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: CEA binding  
 polypeptide

<400> 6  
 Asn Trp Asp Cys Met Phe Gly Ala Glu Gly Trp Ala Cys Ser Pro Trp  
 1 5 10 15

<210> 7  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: CEA binding  
 polypeptide

<400> 7  
 Asp Trp Val Cys Glu Lys Thr Thr Gly Gly Tyr Val Cys Gln Pro Leu  
 1 5 10 15

<210> 8  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: CEA binding  
 polypeptide

<400> 8  
 Asn Trp Phe Cys Glu Met Ile Gly Arg Gln Trp Gly Cys Val Pro Ser  
 1 5 10 15

<210> 9  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: CEA binding  
 polypeptide

<400> 9  
 Asp Trp Val Cys Asn Phe Asp Gln Gly Leu Ala His Cys Phe Pro Ser

<210> 10  
<211> 12  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: parental  
domain for design of microprotein display library  
  
<220>  
<221> VARIANT  
<222> (1)..(12)  
<223> amino acid positions 4 and 9 are invariant Cys;  
all other positions Xaa are varied but not Cys, to  
provide a library of 2x10(8) different peptides  
based on the template sequence

<400> 10  
Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa  
1 5 10

<210> 11  
<211> 11  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: parental  
domain for design of microprotein display library  
  
<220>  
<221> VARIANT  
<222> (1)..(11)  
<223> amino acid positions 3 and 9 are invariant Cys;  
all other positions Xaa are varied but not Cys, to  
provide a library of 1x10(9) different peptides  
based on the template sequence

<400> 11  
Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa  
1 5 10

<210> 12  
<211> 12  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: parental  
domain for design of microprotein display library

<220>

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<221> VARIANT
<222> (1)..(12)
<223> amino acid positions 3 and 10 are invariant Cys;
      all other positions Xaa are varied but not Cys, to
      provide a library of  $1 \times 10^9$  different peptides
      based on the template sequence

<400> 12
Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa
  1             5             10

<210> 13
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: parental
      domain for design of microprotein display library

<220>
<221> VARIANT
<222> (1)..(16)
<223> amino acid positions 4 and 13 are invariant Cys;
      all other positions Xaa are varied but not Cys, to
      provide a library of  $2.5 \times 10^8$  different peptides
      based on the template sequence

<400> 13
Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
  1             5             10             15

<210> 14
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: variable
      sublibrary sequence used in designing focused
      secondary library

<220>
<221> VARIANT
<222> (1)..(3)
<223> Xaa is any amino acid except Cys

<220>
<221> VARIANT
<222> (5)..(6)
<223> Xaa is any amino acid except Cys

<400> 14
Xaa Xaa Xaa Cys Xaa Xaa Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu
  1             5             10             15

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<210> 15  
<211> 16  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: variable  
sublibrary sequence used in designing focused  
secondary library

<220>  
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<222> (5)..(9)  
<223> Xaa is any amino acid except Cys

<400> 15  
Asp Trp Val Cys Xaa Xaa Xaa Xaa Xaa Gln Trp Thr Cys Asn Leu Leu  
1 5 10 15

<210> 16  
<211> 16  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: variable  
sublibrary sequence used in designing focused  
secondary library

<220>  
<221> VARIANT  
<222> (8)..(12)  
<223> Xaa is any amino acid except Cys

<400> 16  
Asp Trp Val Cys Glu Asn Lys Xaa Xaa Xaa Xaa Xaa Cys Asn Leu Leu  
1 5 10 15

<210> 17  
<211> 16  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: variable  
sublibrary sequence used in designing focused  
secondary library

<220>  
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<222> (11)..(12)  
<223> Xaa is any amino acid except Cys

<220>  
 <221> VARIANT  
 <222> (14)..(16)  
 <223> Xaa is any amino acid except Cys  
  
 <400> 17  
 Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Xaa Xaa Cys Xaa Xaa Xaa  
 1 5 10 15

<210> 18  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: variable  
 sublibrary sequence used in designing focused  
 secondary library

<220>  
 <221> VARIANT  
 <222> (6)..(7)  
 <223> Xaa is any amino acid except Cys

<220>  
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 <223> Xaa is any amino acid except Cys

<220>  
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 <222> (12)  
 <223> Xaa is any amino acid except Cys

<220>  
 <221> VARIANT  
 <222> (15)  
 <223> Xaa is any amino acid except Cys

<400> 18  
 Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu  
 1 5 10 15

<210> 19  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: variable  
 sublibrary sequence used in designing focused  
 secondary library

<220>  
 <221> VARIANT



<222> (5) .. (7)

<223> Xaa is any amino acid except Cys

<220>

<221> VARIANT

<222> (9)

<223> Xaa is any amino acid except Cys

<220>

<221> VARIANT

<222> (12)

<223> Xaa is any amino acid except Cys

<400> 19

Asn	Trp	Val	Cys	Xaa	Xaa	Xaa	Lys	Xaa	Gln	Trp	Xaa	Cys	Asn	Ser	Tyr
1				5					10					15	

<210> 20

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: variable  
sublibrary sequence used in designing focused  
secondary library

<220>

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<222> (1)

<223> Xaa is any amino acid except Cys

<220>

<221> VARIANT

<222> (3)

<223> Xaa is any amino acid except Cys

<220>

<221> VARIANT

<222> (14) .. (16)

<223> Xaa is any amino acid except Cys

<400> 20

Xaa	Trp	Xaa	Cys	Asn	Leu	Phe	Lys	Asn	Gln	Trp	Phe	Cys	Xaa	Xaa	Xaa
1				5					10					15	

<210> 21

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: isolate of  
TN10/9 library found not to bind CEA

<400> 21  
 Asn Trp Arg Cys Lys Leu Phe Pro Arg Tyr Pro Tyr Cys Ser Ser Trp  
 1 5 10 15

<210> 22  
 <211> 15  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: isolate of  
 TN10/9 library found not to bind CEA

<400> 22  
 Arg Tyr Cys Glu Phe Phe Pro Trp Ser Leu His Cys Gly Arg Pro  
 1 5 10 15

<210> 23  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: conserved  
 amino acid positions in first family of CEA  
 binding peptides

<220>  
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 <222> (6)  
 <223> X is Asn, Leu, Met or Phe

<220>  
 <221> VARIANT  
 <222> (7)  
 <223> X is Asp, Gly, Ile, Lys, Phe or Thr

<220>  
 <221> VARIANT  
 <222> (9)  
 <223> X is Arg, Asn, Asp, Glu or Gly

<220>  
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 <222> (12)  
 <223> X is Ala, Gly, His, Phe, Thr or Val

<220>  
 <221> VARIANT  
 <222> (15)  
 <223> X is Arg, Leu, Pro or Ser

<400> 23  
 Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu  
 1 5 10 15

<210> 24  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic CEA  
binding peptide with C-terminal immobilization  
sequence

<400> 24  
Ser Asn Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Ser  
1 5 10 15  
Tyr Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys  
20 25

<210> 25  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic CEA  
binding peptide with C-terminal immobilization  
sequence

<400> 25  
Ser Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Trp Thr Cys Asn Leu  
1 5 10 15  
Leu Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys  
20 25

<210> 26  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: synthetic CEA  
binding peptide with C-terminal immobilization  
sequence

<400> 26  
Ser Asn Trp Asp Cys Met Phe Gly Ala Glu Gly Trp Ala Cys Ser Pro  
1 5 10 15  
Trp Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys  
20 25

<210> 27

<211> 27  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: synthetic CEA  
 binding peptide with C-terminal immobilization  
 sequence  
  
 <400> 27  
 Ser Asp Trp Val Cys Glu Leu Thr Thr Gly Gly Tyr Val Cys Gln Pro  
 1 5 10 15  
  
 Leu Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys  
 20 25  
  
 <210> 28  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: C-terminal  
 sequence for immobilizing peptides  
  
 <400> 28  
 Ala Pro Gly Gly Glu Gly Gly Gly Ser Lys  
 1 5 10  
  
 <210> 29  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: template  
 sequence for sublibrary used in construction of  
 focused secondary display library  
  
 <220>  
 <221> VARIANT  
 <222> (1)..(3)  
 <223> X is any amino acid except Cys  
  
 <220>  
 <221> VARIANT  
 <222> (5)..(6)  
 <223> X is any amino acid except Cys  
  
 <400> 29  
 Xaa Xaa Xaa Cys Xaa Xaa Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu  
 1 5 10 15  
  
 <210> 30

<211> 16  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: template  
sequence for sublibrary used in construction of  
focused secondary display library

<220>

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<222> (5)..(9)

<223> X is any amino acid except Cys

<400> 30

Asp	Trp	Val	Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Gln	Trp	Thr	Cys	Asn	Leu	Leu
1				5					10					15	

<210> 31

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: template  
sequence for sublibrary used in construction of  
focused secondary display library

<220>

<221> VARIANT

<222> (8)..(12)

<223> X is any amino acid except Cys

<400> 31

Asp	Trp	Val	Cys	Glu	Asn	Lys	Xaa	Xaa	Xaa	Xaa	Xaa	Cys	Asn	Leu	Leu
1				5					10					15	

<210> 32

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: template  
sequence for sublibrary used in construction of  
focused secondary display library

<220>

<221> VARIANT

<222> (11)..(12)

<223> X is any amino acid except Cys

<220>

<221> VARIANT

<222> (14)..(16)

<223> X is any amino acid except Cys

<400> 32

Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Xaa Xaa Cys Xaa Xaa Xaa  
1 5 10 15

<210> 33

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: template  
sequence for sublibrary used in construction of  
focused secondary display library

<220>

<221> VARIANT

<222> (6)..(7)

<223> X is any amino acid except Cys

<220>

<221> VARIANT

<222> (9)

<223> X is any amino acid except Cys

<220>

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<222> (12)

<223> X is any amino acid except Cys

<220>

<221> VARIANT

<222> (15)

<223> X is any amino acid except Cys

<400> 33

Asp Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Leu  
1 5 10 15

<210> 34

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: template  
sequence for sublibrary used in construction of  
focused secondary display library

<220>

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<222> (5)..(7)

<223> X is any amino acid except Cys

<220>  
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 <222> (9)  
 <223> X is any amino acid except Cys

<220>  
 <221> VARIANT  
 <222> (12)  
 <223> X is any amino acid except Cys

<400> 34  
 Asn Trp Val Cys Xaa Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Ser Tyr  
 1 5 10 15

<210> 35  
 <211> 16  
 <212> PRT  
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<220>  
 <223> Description of Artificial Sequence: template  
 sequence for sublibrary used in construction of  
 focused secondary display library

<220>  
 <221> VARIANT  
 <222> (1)  
 <223> X is any amino acid except Cys

<220>  
 <221> VARIANT  
 <222> (3)  
 <223> X is any amino acid except Cys

<220>  
 <221> VARIANT  
 <222> (14)..(16)  
 <223> X is any amino acid except Cys

<400> 35  
 Xaa Trp Xaa Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Xaa Xaa Xaa  
 1 5 10 15

<210> 36  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: family of CEA  
 binding polypeptides

<220>  
 <221> VARIANT  
 <222> (1)

<223> Xaa is Asp, Asn, Ala or Ile  
  
 <220>  
 <221> VARIANT  
 <222> (3)  
 <223> Xaa is Val, Ile, Met, Tyr, Phe, Pro or Asp  
  
 <220>  
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 <222> (5)  
 <223> Xaa is Asn, Glu or Asp  
  
 <220>  
 <221> VARIANT  
 <222> (6)  
 <223> Xaa is Leu, Phe, Tyr, Trp, Val Met, Ile or Asn  
  
 <220>  
 <221> VARIANT  
 <222> (7)  
 <223> Xaa is Phe, Leu, Asp, Glu, Ala, Ile, Lys, Asn,  
       Ser, Val, Trp or Tyr  
  
 <220>  
 <221> VARIANT  
 <222> (8)  
 <223> Xaa is Lys, Phe, Asp, Gly, Leu, Asn or Trp  
  
 <220>  
 <221> VARIANT  
 <222> (9)  
 <223> Xaa is Asn, Pro, Phe, Gly, Asp, Ala, Ser, Glu, Gln  
       or Trp  
  
 <220>  
 <221> VARIANT  
 <222> (10)  
 <223> Xaa is Gln or Lys  
  
 <220>  
 <221> VARIANT  
 <222> (12)  
 <223> Xaa is Phe, Thr, Met, Ser, Ala, Asn, Val, His,  
       Ile, Pro, Trp or Tyr  
  
 <220>  
 <221> VARIANT  
 <222> (14)  
 <223> Xaa is Asn, Asp, Glu, Pro, Gln or Ser  
  
 <220>  
 <221> VARIANT  
 <222> (15)  
 <223> Xaa is Val, Leu, Ile, Pro, Ala, Gln, Ser, Met,  
       Glu,Thr, Lys or Trp  
  
 <220>



<221> VARIANT

<222> (16)

<223> Xaa is Leu, Met, Val, Tyr, Ala, Ile, Trp, His,  
Pro, Gln, Glu, Phe, Lys or Arg

<400> 36

Xaa Trp Xaa Cys Xaa Xaa Xaa Xaa Xaa Trp Xaa Cys Xaa Xaa Xaa  
1 5 10 15

<210> 37

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 37

Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Leu Met  
1 5 10 15

<210> 38

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 38

Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Leu Met  
1 5 10 15

<210> 39

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 39

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Met  
1 5 10 15

<210> 40

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 40

Asn Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Glu  
1 5 10 15

<210> 41

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 41

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Gln Val Lys  
1 5 10 15

<210> 42

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 42

Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Met  
1 5 10 15

<210> 43

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 43

Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Ile  
1 5 10 15

<210> 44

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 44

Ile Trp Asp Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Pro Ala Pro  
1 5 10 15

<210> 45

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 45

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ile Arg  
1 5 10 15

<210> 46

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 46

Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Val  
1 5 10 15

<210> 47

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 47

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ala Ile  
1 5 10 15

<210> 48

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding

polypeptide

<400> 48

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Met Ala  
1 5 10 15

<210> 49

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 49

Asp Trp Val Cys Glu Phe Leu Lys Met Gln Trp Ala Cys Asn Val Leu  
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<210> 50

<211> 16

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 50

Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Val Met  
1 5 10 15

<210> 51

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 51

Ala Trp Pro Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Pro Pro Gln  
1 5 10 15

<210> 52

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 52  
 Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Leu  
 1 5 10 15

<210> 53  
 <211> 16  
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<400> 53  
 Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Lys Trp  
 1 5 10 15

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<400> 54  
 Asp Trp Val Cys Glu Trp Leu Lys Met Gln Trp Ala Cys Asn Met Leu  
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<210> 55  
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<400> 55  
 Asp Trp Val Cys Asp Phe Phe Phe Asn Gln Trp Thr Cys Asn Leu Leu  
 1 5 10 15

<210> 56  
 <211> 16  
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<400> 56

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1 5 10 15

<210> 57

<211> 16

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 57

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<210> 58

<211> 16

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polypeptide

<400> 58

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1 5 10 15

<210> 59

<211> 16

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 59

Asp Trp Val Cys Glu Tyr Phe Lys Asn Gln Trp Phe Cys Asn Val Leu  
1 5 10 15

<210> 60

<211> 16

<212> PRT

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

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<210> 61  
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<220>  
 <223> Description of Artificial Sequence: CEA binding polypeptide

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<210> 62  
 <211> 16  
 <212> PRT  
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<220>  
 <223> Description of Artificial Sequence: CEA binding polypeptide

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1				5					10					15	

<210> 63  
 <211> 16  
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<220>  
 <223> Description of Artificial Sequence: CEA binding polypeptide

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<210> 64  
 <211> 16  
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<220>  
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1

5

10

15

&lt;210&gt; 65

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: CEA binding  
polypeptide

&lt;400&gt; 65

Asp Trp Val Cys Glu Leu Val Lys Ala Gln Trp Tyr Cys Asn Ile Leu  
1 5 10 15

&lt;210&gt; 66

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: CEA binding  
polypeptide

&lt;400&gt; 66

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1 5 10 15

&lt;210&gt; 67

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: CEA binding  
polypeptide

&lt;400&gt; 67

Asp Trp Val Cys Glu Phe Tyr Lys Ser Gln Trp Asn Cys Asn Ile Leu  
1 5 10 15

&lt;210&gt; 68

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: CEA binding  
polypeptide

&lt;400&gt; 68

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<400> 69  
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<210> 70  
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1 5 10 15

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polypeptide

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1 5 10 15

<210> 73  
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polypeptide

<400> 73  
Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Val  
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polypeptide

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1 5 10 15

<210> 75  
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polypeptide

<400> 75  
Asp Trp Val Cys Glu Phe Phe Lys Gln Gln Trp Phe Cys Asn Val Leu  
1 5 10 15

<210> 76  
<211> 16  
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polypeptide

<400> 76  
Asp Trp Val Cys Glu Phe Phe Lys Asp Gln Trp Ser Cys Asn Val Leu  
1 5 10 15

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<400> 77  
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1 5 10 15

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polypeptide

<400> 78  
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polypeptide

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1 5 10 15

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polypeptide

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<400> 82  
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<210> 83  
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polypeptide

<400> 83  
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   1                  5                  10                  15  
  
 <210> 86  
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 <223> Description of Artificial Sequence: CEA binding  
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   1                  5                  10                  15  
  
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 <223> Description of Artificial Sequence: CEA binding  
           polypeptide  
  
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   1                  5                  10                  15  
  
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 <223> Description of Artificial Sequence: CEA binding  
           polypeptide  
  
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polypeptide

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 90

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 91

Asp	Trp	Val	Cys	Glu	Met	Phe	Lys	Lys	Gln	Trp	Val	Cys	Asn	Pro	Leu
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<210> 92

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 92

Asp	Trp	Ile	Cys	Asn	Leu	Phe	Lys	Asn	Gln	Trp	Phe	Cys	Gly	Pro	Leu
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<211> 16

<212> PRT

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 93

Asp	Trp	Val	Cys	Glu	Val	Ile	Lys	Asp	Gln	Trp	Val	Cys	Asn	Pro	Leu
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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 94

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1				5					10					15	

<210> 95

<211> 16

<212> PRT

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 95

Asp	Trp	Val	Cys	Glu	Tyr	Ala	Lys	Asn	Gln	Trp	Asn	Cys	Asn	Pro	Leu
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<210> 96

<211> 16

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 96

Asn	Trp	Val	Cys	Asn	Leu	Phe	Lys	Asn	Gln	Trp	Phe	Cys	Glu	Trp	Ala
1				5					10					15	

<210> 97

<211> 16

<212> PRT

<213> Artificial Sequence

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 <223> Description of Artificial Sequence: CEA binding  
 polypeptide

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 Asn Trp Val Cys Asp Tyr Trp Lys Pro Gln Trp Phe Cys Asn Ser Tyr  
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<210> 98  
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 <212> PRT  
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<220>  
 <223> Description of Artificial Sequence: CEA binding  
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<210> 99  
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<210> 101  
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<223> Description of Artificial Sequence: CEA binding  
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<210> 102

<211> 16

<212> PRT

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 102

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<210> 103

<211> 16

<212> PRT

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polypeptide

<400> 103

Asn Trp Val Cys Glu Trp Leu Lys Pro Gln Trp Trp Cys Asn Ser Tyr  
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<210> 104

<211> 16

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polypeptide

<400> 104

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1 5 10 15

<210> 105

<211> 16

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polypeptide

<400> 105

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1 5 10 15

<210> 106

<211> 16

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 106

Asp Trp Val Cys Glu Phe Phe Gly Met Gln Trp Thr Cys Asn Leu Leu  
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<210> 107

<211> 16

<212> PRT

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 107

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1 5 10 15

<210> 108

<211> 16

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: CEA binding  
polypeptide

<400> 108

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Glu Ala  
1 5 10 15

<210> 109

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 109  
 Asp Trp Val Cys Glu Tyr Phe Lys Asn Gln Trp Phe Cys Asp Thr Leu  
           1                  5                  10                  15

<210> 110  
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<220>  
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           16-mer microprotein analogues

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<220>  
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           Val, Trp, Tyr, Gly or Thr

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           or Thr

<220>  
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           Trp, His, Arg, Met, Val or Leu

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 <222> (9)  
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Pro, Trp, Tyr, Gly, Leu or Glu

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Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys  
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<210> 111

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<212> PRT

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<220>

<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

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Val, Trp, Tyr, Gly, or Thr

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or Thr

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Trp, His, Arg, Met, Val, or Leu

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Pro, Trp, Tyr, Gly, Leu or Glu

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<223> X is Asn, Asp, Glu, Pro, Gln, Ser, Phe, or Val

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<221> VARIANT

<222> (15)

<223> X is Val, Leu, Ile, Pro, Ala, Gln, Ser, Met, Glu,  
Thr, Lys, Trp or Arg

<220>

<221> VARIANT

<222> (16)

<223> X is Leu, Met, Val, Tyr, Ala, Ile, Trp, His, Pro,  
Gln, Glu, Phe, Lys, Arg or Ser

<400> 111

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<210> 112

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 112

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1 5 10 15

<210> 113

<211> 16

<212> PRT

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 113

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<210> 114

<211> 16

<212> PRT

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 114

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<210> 115

<211> 16

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

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1 5 10 15

<210> 116

<211> 16

<212> PRT

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

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<210> 117

<211> 16

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 16-mer microprotein analogues

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<210> 118  
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 16-mer microprotein analogues

<400> 118  
 Asp Trp Val Cys Glu Phe Glu Lys Gly Gln Trp Thr Cys Asn Val Leu  
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<210> 119  
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 <223> Description of Artificial Sequence: synthetic  
 16-mer microprotein analogues

<400> 119  
 Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Val Trp  
 1 5 10 15

<210> 120  
 <211> 16  
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 16-mer microprotein analogues

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<210> 121  
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16-mer microprotein analogues

<400> 121

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ile Arg  
1 5 10 15

<210> 122

<211> 16

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 122

Asp Trp Val Cys Glu Trp Leu Lys Met Gln Trp Ala Cys Asn Ile Leu  
1 5 10 15

<210> 123

<211> 16

<212> PRT

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 123

Asp Trp Val Cys Glu Phe Ile Lys Asp Gln Trp Tyr Cys Asp Leu Ala  
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<210> 124

<211> 16

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 124

Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Val  
1 5 10 15

<210> 125

<211> 16

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 125

Asp Trp Val Cys Glu Trp Leu Lys Met Gln Trp Ala Cys Asn Val Leu  
1 5 10 15

<210> 126

<211> 16

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 126

Asp Trp Val Cys Glu Trp Leu Lys Asn Gln Trp Trp Cys Asn Val Leu  
1 5 10 15

<210> 127

<211> 16

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 127

Asp Trp Val Cys Glu Leu Leu Lys Asn Gln Trp Phe Cys Asn Val Leu  
1 5 10 15

<210> 128

<211> 16

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 128

Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Val Leu  
1 5 10 15

<210> 129

<211> 16

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

# 16-mer microprotein analogues

<400> 129

Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Met  
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<210> 130

<211> 16

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<400> 130

Asp Trp Val Cys Glu Trp Phe Lys Ala Gln Trp Phe Cys Asn Met Leu  
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<210> 131

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16-mer microprotein analogues

<400> 131

Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Leu  
1 5 10 15

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<400> 132

Asp Trp Met Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Val Gln  
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<400> 133  
Asp Trp Val Cys Glu Phe Asp Lys Gly Gln Trp Asn Cys Asn Ile Leu  
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<210> 134  
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16-mer microprotein analogues

<400> 134  
Asp Trp Ile Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Ala Trp  
1 5 10 15

<210> 135  
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16-mer microprotein analogues

<400> 135  
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1 5 10 15

<210> 136  
<211> 16  
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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 136  
Asp Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asp Gln Met  
1 5 10 15

<210> 137  
<211> 16  
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16-mer microprotein analogues

<400> 137  
Asp Trp Val Cys Glu Phe Phe Lys Ser Gln Trp Tyr Cys Asn Ile Leu  
1 5 10 15

<210> 138  
<211> 16  
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16-mer microprotein analogues

<400> 138  
Asp Trp Val Cys Glu Trp Leu Lys Met Gln Trp Ala Cys Asn Met Leu  
1 5 10 15

<210> 139  
<211> 16  
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<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 139  
Asp Trp Val Cys Glu Tyr Phe Lys Asn Gln Trp Leu Cys Asn Ile Leu  
1 5 10 15

<210> 140  
<211> 16  
<212> PRT  
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16-mer microprotein analogues

<400> 140  
Asp Trp Val Cys Glu Trp Leu Lys Met Gln Trp Ala Cys Asn Ile Leu  
1 5 10 15

<210> 141  
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16-mer microprotein analogues

<400> 141

Asp	Trp	Val	Cys	Glu	Trp	Leu	Lys	Met	Gln	Trp	Phe	Cys	Asn	Ala	Leu
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<210> 142  
 <211> 16  
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 16-mer microprotein analogues

Asp	Trp	Val	Cys	Glu	Trp	Leu	Lys	Met	Gln	Trp	Ala	Cys	Asn	Val	Leu
1					5				10					15	

<210> 143  
 <211> 16  
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 16-mer microprotein analogues

Asp	Trp	Val	Cys	Glu	Trp	Leu	Lys	Met	Gln	Trp	Ala	Cys	Asn	Met	Leu
1					5				10					15	

<210> 144  
 <211> 16  
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 16-mer microprotein analogues

Asp	Trp	Val	Cys	Glu	Trp	Leu	Lys	Pro	Gln	Trp	Tyr	Cys	Asn	Ser	Leu
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<210> 145  
 <211> 16  
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 16-mer microprotein analogues

Asp	Trp	Val	Cys	Asn	Leu	Phe	Lys	Asn	Gln	Trp	Phe	Cys	Asp	Leu	Ser
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1

5

10

15

&lt;210&gt; 146

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

&lt;400&gt; 146

Asp	Trp	Val	Cys	Glu	Trp	Leu	Lys	Ser	Gln	Trp	Phe	Cys	Asn	Ser	Leu
1				5					10					15	

&lt;210&gt; 147

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

&lt;400&gt; 147

Asp	Trp	Val	Cys	Glu	Phe	Ile	Lys	Ser	Gln	Trp	Phe	Cys	Asn	Val	Leu
1				5					10					15	

&lt;210&gt; 148

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

&lt;400&gt; 148

Asp	Trp	Val	Cys	Glu	Trp	Leu	Lys	His	Gln	Trp	Phe	Cys	Asn	Ala	Leu
1				5					10					15	

&lt;210&gt; 149

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

&lt;400&gt; 149

Asp	Trp	Val	Cys	Glu	Ile	Val	Lys	Asn	Gln	Trp	Ile	Cys	Asn	Pro	Leu
1				5					10					15	

<210> 150  
<211> 16  
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<220>  
<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 150  
Asp Trp Val Cys Glu Phe Phe Lys Asp Gln Trp Phe Cys Asn Ile Leu  
1 5 10 15

<210> 151  
<211> 16  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: synthetic  
16-mer microprotein analogues

<400> 151  
Asp Trp Val Cys Glu Phe Leu Lys Met Gln Trp Ala Cys Asn Val Leu  
1 5 10 15



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A DOCPHOENIX

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       SRNT         
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